

STATEMENT OF MAJOR GENERAL MICHAEL KOSTELNIK, ASSISTANT  
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PROTECTION OFFICE OF AIR AND MARINE, BEFORE THE COMMITTEE  
ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON  
AVIATION, ON UNMANNED AERIAL VEHICLES AND THE NATIONAL  
AIRSPACE SYSTEM

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Good morning, Chairman Mica, Congressman Costello, and Members of the Subcommittee. It is my pleasure to be with you today to discuss the future of the unmanned aerial vehicles (UAVs) program in protecting our borders and ensuring our national security. This issue is of enormous importance, since the use of UAVs can significantly enhance our ability to protect our borders. The Bureau of Customs and Border Protection Air and Marine (CBP A&M) is keenly aware of the safety concerns surrounding the program and is proud to be working with the Federal Aviation Administration (FAA), the Coast Guard, the Department of Defense, and the Department of the Interior to implement the best action plan for this vital equipment.

After years of military use, the Department of Homeland Security (DHS) announced the first sustained civilian use of UAVs on June 25, 2004. The aircraft were then used to strengthen the Arizona Border Control Initiative (ABCI). The FY 2005 and FY 2006 Appropriations to the Custom and Border Protection and Science and Technology Directorate contained funding sufficient to acquire a complete system consisting of two aircraft. One UAV has been acquired and the other is scheduled to be delivered this summer; the FY 2007 request contains \$10.3 million

for the UAV program. Using successes already achieved as a guide, CBP A&M is looking toward long-term program needs and is constantly working to build a strong and safe program.

Sections 5101 and 5201 of the Intelligence Reform and Terrorism Prevention Act of 2004 directed the Secretary of Homeland Security to develop a comprehensive plan for the systematic surveillance of the Southwest Border by UAVs. Under the direction of former Secretary Ridge, CBP established an initial operating capability in September 2005 with the delivery of a Predator B UAV. As UAVs are most effective at night, CBP considers the optimum mission scenario for a UAV to be a 14-hour day, sunset to sunrise, 6 days a week. The UAV currently in CBP's possession is operating in a Temporary Flight Restricted (TFR) Zone from 5:00 p.m. to 7:00 a.m.

With a northern land border that is 4,121 miles long with 430 official ports of entry and an untold number of illegal crossing places and a southern land border that is 2,062 miles long with 30 official ports of entry and an untold number of illegal crossing places, we need additional technology to supplement manned aircraft surveillance and current ground assets to ensure more effective monitoring of United States territory, adjacent to our neighbors' non-maritime territory. Electro-Optical sensors now exist that would allow UAVs to fill a gap in current land border surveillance. Those sensors have the ability to identify small objects from high altitudes in a variety of weather conditions (although EO/IR sensors are

adversely effected by bad weather). Acquiring better sensors would provide CBP with the opportunity to fly in positive control airspace. That would increase the safety of the flights since operating in positive control airspace would allow the UAV to be segregated away from general aviation aircraft operating under visual flight rules and to operate in airspace where all aircraft are totally controlled by and required to communicate with Air Traffic Control.

UAVs are also an economical choice for surveillance. The Predator B costs \$6.8 million. By contrast, a P-3 aircraft costs significantly more to acquire and operate. Aerostats, which are unmanned, helium-filled blimps that are tethered to the ground, represent a fixed alternative to traditional UAVs, though a geographically limited one. Already fielded for both military and civilian use, aerostats match some of the appealing qualities of the UAVs: low cost, elevated sensor capabilities, and lengthy loiter times. They do not, however, provide the same opportunity for ground control or large areas of coverage. With the capability to fly for more than 30 hours without refueling, UAVs have a significant advantage over manned aircraft in some circumstances and the possibility for extended coverage regions, unlike aerostats, which is important for successful border surveillance. The Predator B aircraft, with its man-in-the-loop, brings its operator into the mission area “virtually”, providing unique mission capability for an unmanned system.

It is fair and prudent to address a wide variety of safety of flight issues that UAVs present to flight in controlled airspace intermingled with manned aircraft. As this emerging technology is still relatively new - particularly for domestic use, valid safety issues have been raised and need to be addressed. CBP has been flying the Predator B since late September 2005, and to date operations have been incident-free. A 2005 study from the Massachusetts Institute of Technology stated in its abstract, "It is in the public interest to achieve the full benefits of UAV operations, while still preserving safety through effective mitigation of risks with the least possible restrictions."<sup>1</sup> The Predator B that CBP operates contains a redundant system to ensure lower accident rates. This redundant system works on all levels, from sensors to the flight computer, and provides a triple-check system to protect the vehicle and others in the airspace. CBP tested several UAV systems during ABCI in 2004 and 2005. A contract was competitively awarded to General Atomics for the Predator B because of its ability to meet DHS requirements.

The Predator B is also programmed with a Lost Link (flight control) function to allow the aircraft to autonomously and automatically execute link recovery actions to maximize opportunity to recover link. This function is implemented within the triplex flight computer and therefore has the same integrity as the flight critical elements. In the event of protracted loss of link, the aircraft is flown autonomously via Emergency Mission waypoints to a safe loiter area while changing transponder

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<sup>1</sup> Weibel, Roland E. and Hansman, R. John, "Safety Considerations for Operation of Unmanned Aerial Vehicles in the National Airspace System," p. 3 (March 2005).

codes and eventual set down in a predetermined area. In this manner, safe containment is maintained in the event that the multiple data links fail. The vehicle also has failure management functions that prevent aircraft flyaway outside of the assigned operating areas. During FAA review and approval, this functionality was regarded as pivotal to safety when mitigating the effect of highly improbable, but worse case, scenarios.

The mission control officer must maintain awareness of forecasted, reported, and prevailing weather along the Lost Link route of flight at prescribed altitudes by all available means. The mission control officer must input Lost Link plans before flight and update as necessary and must continually update minimum fuel to account for weather hazards such as cloud layers, icing, and turbulence.

Pilots are held to a very high standard as well. They are all FAA instrument rated and maintain currency by flying a minimum of 200 UAV logged flight hours. In addition, pilots must successfully complete an annual oral and written examination and an annual check flight evaluation. All pilots are trained to handle the most critical emergencies that a UAV can face, including engine or generator failure at takeoff and in flight, engine over-heating, nose camera failure, ground control station rack or monitor failure, and smoke and fire in a ground control station.

CBP A&M uses established procedures and agreements to conduct real time coordination with the FAA for the launch of law enforcement aircraft on exigent

missions. An FAA liaison is permanently assigned to the Air and Marine Operations Center (AMOC) to further facilitate any non-standard situations that may arise, which are not addressed in the existing written guidance. AMOC has electronic access to FAA flight plans, radar data, and communications to all FAA air traffic facilities. CBP A&M operators use this connectivity to coordinate law enforcement air operations with FAA. The FAA is currently developing guidelines and will undoubtedly practice the utmost caution when determining regulations for these aircraft to become a part of our airspace on a daily basis.

CBP A&M is an active member of the FAA tasked RTCA Special Committee 203, which is gathering data to develop standards, crucial to moving forward with the integration of UAVs into the National Airspace System (NAS). CBP A&M is committed to working with the FAA and other organizations by providing lessons learned to ensure the safety of the NAS.

While UAVs are not the panacea for all mission types and will not replace manned aircraft in most of our current missions, they do provide unique capabilities that will make them force multipliers for our border surveillance and interdiction missions.

CBP A&M is committed to supporting our mission – “preventing terrorists and terrorist weapons from entering the United States, while also facilitating the flow of legitimate trade and travel.” As one of the agencies responsible for protecting our borders, we take the responsibility seriously. We are committed to working with

Congress and with relevant Federal agencies to keep our borders – as well as our National Airspace System – safe.

Mr. Chairman, this concludes my prepared remarks and I would happy to answer any questions you may have. Thank you for your time.